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(56) Documents Cited

**EP 0784942 A1**

**US 5845342 A**

**US5652964 A**

**US 4047249 A**

(58) Field of Search

UK CL (Edition S ) **A3V**

INT CL<sup>7</sup> **A42B 3/22 3/24**

Online: **WPI, EPODOC, JAPIO**

(54) Abstract Title

**Light reactive, anti-misting and scratch resistant visor**

(57) A visor for a motorcycle or motor sport helmet includes a light reactive (photochromatic) and anti-misting polymer film applied to its inner surface, the outer surface of the visor further being scratch-resistant. The visor has duality of function in that it reacts to light intensity to prevent glare to the user whilst also preventing misting from hot breath in cool air conditions.

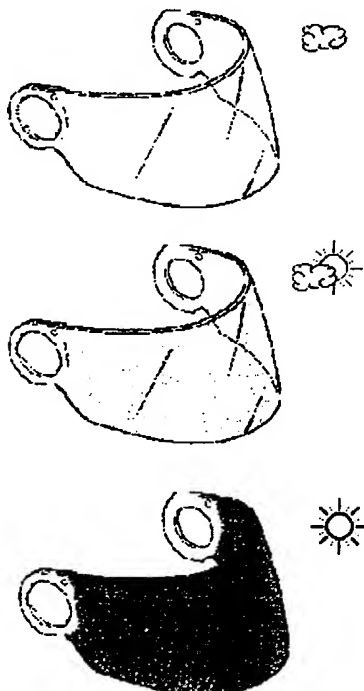


FIG. 1

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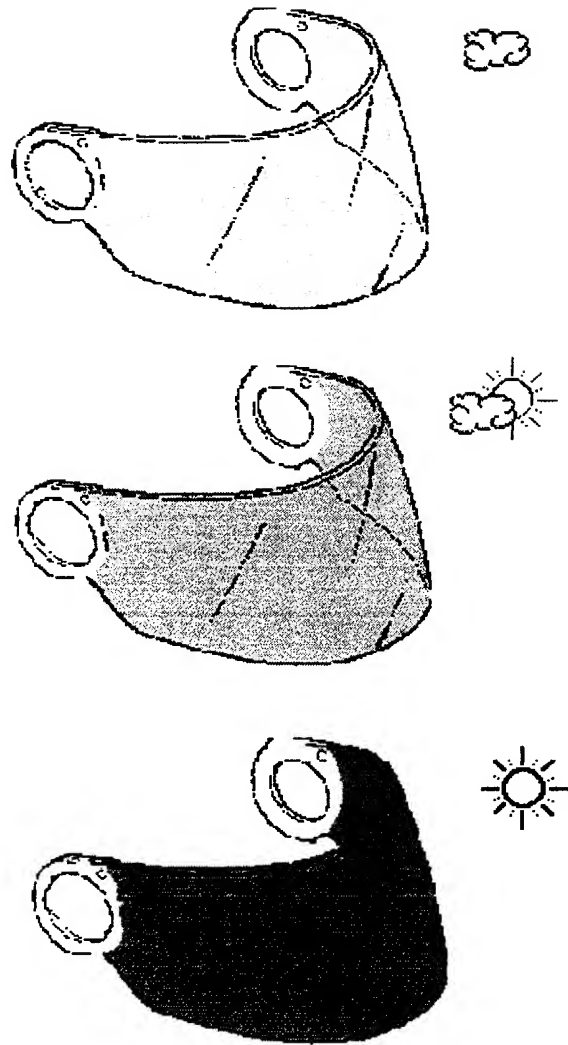


FIG. 1

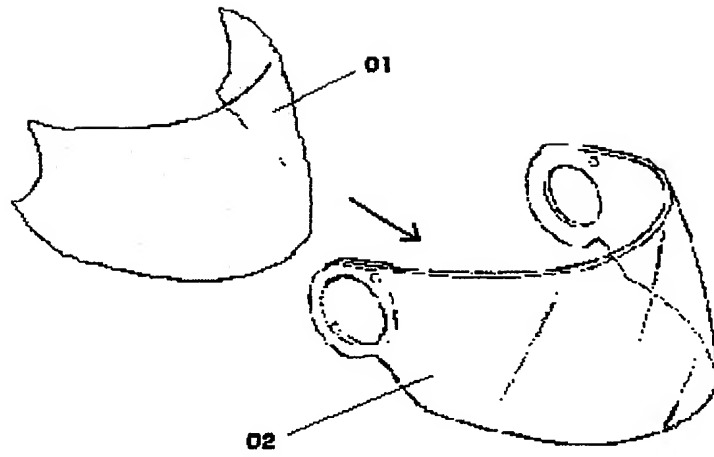


FIG. 2

## ANTI-GLARE & MIST PROTECTION VISOR

This invention relates to a photo-reactive, anti-misting visor for motorcycle and motorsport helmets. Its key proponents are that it has duality of function, in that it reacts to light intensity and thereby adjusts its transmission density and also prevents misting from hot breath in cool air conditions.

Motorcycle and motorsport helmet visors are well known devices that protect the rider/driver from oncoming particles/debris. In recent years some of these visors have been tinted to prevent sun glare to the motorist. The most popular of these visors have been ones that exclude 50% or more of the sun's light rays.

These tinted visors, however, were deemed unsafe and therefore made illegal by the Road Traffic Act 1988 (UK). Accordingly they have failed to achieve British Standard (BS) accreditation. They are considered dangerous because they permanently exclude 50% of light rays even in low light conditions, where they would impair safe visibility. Epsom Magistrates Court banned them from sale and use in the UK during November 2000.

The use of photo-chromatic materials and reagents is known in the prior art. A number of patents exist where processes are described for varying tint. None, however, have resolved or purported to resolve the perpetual problem of misting which obscures vision when using a helmet. With road safety in mind, and of particular interest to Northern European motorcyclists, is the increased dangers posed in winter and spring. Both the winter's sun, hanging low in the sky and bright spring mornings factor both blinding sun glare and also severe visor misting; the rider's hot breath reacting with the cold visor surface (due to the climatic conditions).

Whilst the aforementioned devices fulfil their particular spheres of address, they do not counteract the dual safety issue of impaired vision from glare and/or misting during both variable light and heat conditions. It should be appreciated from both common experience and recent legal actions there is a need for continued development of driver/rider safety that has not been hereto satisfied. The present invention departs from all previous concepts with the duality of its function. By both adjusting its transmission density and preventing misting, the present invention addresses this need completely.

It has been developed solely to provide increased safety to crash helmet users and provide them with protection from light/sun glare and visor misting.

This invention's essential technical features are a light ("photo") reactive and anti-misting visor that is scratch resistant on its exterior surface. Its interior surface is comprised of a soft polymer film layer and resists misting from human breath during cold weather conditions. The assembled article cannot be unassembled. The visor's "at rest" state (i.e. normal daylight) allows more than 50% of light rays to penetrate it. During bright sunlight or directed bright lights the photo-reactive film layer alters its light transmission density to exclude a proportion of directed light rays, thereby protecting the motorist from glare. It is assembled in such a way that the permanent adhesive between the two layers 01 and 02 does not distort or in any other way compromise the user's vision.

A specific embodiment of the invention will now be described by way of example with reference to the accompanying drawings in which: -

Fig.1 shows in perspective, the assembled visor reacting to varying sunlight conditions.

Fig. 2 illustrates the component parts of the finished visor before final assembly, when the visor is manufactured by a two-part assembly process. The visor comprising of a light reactive film or transfer permanently adhered to the inside of a transparent hard visor body. The permanent adhesive used and method of application should not compromise in any way the user's vision.

Referring to the drawing the visor comprises a light sensitive, anti-misting film/transfer 01 and a transparent, scratch resistant visor 02. The film is permanently adhered to the visor using a permanent adhesive. The assembly process (not shown) should exclude all dust particles; this may vary but such examples include water-flotation assembly and roller compression.

## CLAIMS

1. A light (“photo”) reactive and anti-misting visor that is scratch resistant on its exterior. Its interior surface is comprised of a soft polymer film layer and resists misting from human breath during cold weather conditions. The assembled article cannot be unassembled. The visor’s “at rest” state (i.e. normal daylight) allows more than 50% of light rays to penetrate it. During bright sunlight or directed bright lights the photo-reactive film layer alters its light transmission density to exclude a proportion of directed light rays, thereby protecting the motorist from glare. It is assembled in such a way that the permanent adhesive between the two layers 01 and 02 does not distort or in any other way compromise the user’s vision.
2. A visor as claimed in Claim 1 wherein the “at rest” level of light transmission density can be set at manufacture to any level of light exclusion up to and including 50% of light exclusion.
3. A visor as claimed in Claim 1 and Claim 2, wherein the maximum level of light transmission density can be set at manufacture between 80% and 20% of light transmission.
4. A visor as claimed in Claims 1-3 that is assembled using permanent adhesive that does not compromise the visor user’s vision. The adhesive’s chemical make-up is that it does not destroy or impair either layers 01 or 02. Specifically its make-up is that it does not destroy the photo-reagents in layer 01.
5. A visor as claimed in Claims 1-4 that is assembled using permanent adhesive over the entire area of layer 01.
6. A visor as claimed in Claims 1-4 that is assembled using permanent adhesive only around the perimeter of layer 01, at (say) a width of 5 to 15mm starting from its exterior edge.
7. A visor as claimed in Claims 1-6 that is assembled by using compression rollers to permanently adhere layers 01 and 02 whilst excluding all dust particles or foreign bodies. The compression method does not destroy or impair either layers 01 or 02. Specifically the level of compression does not destroy the photo-reagents in layer 01.
8. A visor as claimed in Claims 1-6 that is assembled by using water flotation to permanently adhere layers 01 and 02 whilst excluding all dust particles or foreign bodies, i.e. the respective parts are assembled under water.

9. A visor as claimed in Claims 1-3 that is mould manufactured as a one-piece unit from the outset.



**Application No:** GB 0101079.2  
**Claims searched:** 1 - 9

**Examiner:** Dean Lacey  
**Date of search:** 9 March 2001

## **Patents Act 1977**

### **Search Report under Section 17**

#### **Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.S): A3V

Int Cl (Ed.7): A42B: 3/22, 3/24

Other: Online: WPI, EPODOC, JAPIO

#### **Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
Y	EP 0784942 A1 (Oy Plexijaloste Ab) See whole document.	1-9
Y	US 5845342 A (Korea OGK) See whole document, esp. col. 3 lines 58 - 64.	1-9
Y	US 5652964 A (Reinhardt) See whole document, esp. col. 2 lines 9 - 15.	1-9
X	US 4047249 A (Booth) See whole document, esp. col. 3 lines 18 - 21 and lines 35 - 43.	1-9

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.